

What is claimed is :

1. An image forming apparatus capable of successively forming images on a first surface and a second surface of a transfer material and fixing the images, comprising:
 - an image carrier;
 - a light scanning device that forms a latent image on said image carrier by scanning a light beam based on image data and in accordance with an image clock;
 - a horizontal synchronization signal detecting device that detects from the light beam a horizontal synchronization signal for controlling a write start position of the latent image on the image carrier; and
 - a pulse adjusting device that sets a second number of pulses of the image clock corresponding to a distance from said horizontal synchronization signal detecting device to the write start position of the latent image during image formation on the second surface, to a number of pulses different from a first number of pulses of the image clock corresponding to a distance from said horizontal synchronization signal detecting device to the write start position of the latent image during image formation on the first surface, based on the first number of pulses of the image clock during image formation on the first surface, in accordance with an expansion/contraction ratio of

the transfer material after fixing of the image on the first surface.

2. An image forming apparatus as claimed in claim 1, comprising a control device that controls the 5 write start position of the latent image on the second surface in accordance with the second number of pulses of the image clock during image formation on the second surface, set by said pulse adjusting device and a frequency of the image clock during image formation on 10 the second surface.

3. An image forming apparatus as claimed in claim 2, comprising a clock frequency correcting device that sets a frequency of the image clock during image formation on the first surface and the frequency of the 15 image clock during image formation on the second surface.

4. An image forming apparatus as claimed in claim 3, wherein said clock frequency correcting device adjusts a size of the image formed on the second surface to a size of the image formed on the first 20 surface after fixing by modulating the frequency of the image clock during image formation on the second surface.

5. An image forming apparatus capable of successively forming images on a first surface and a 25 second surface of a transfer material and fixing the images, comprising:

an image carrier;

a light scanning device that forms a latent image on said image carrier by scanning a light beam based on image data and in accordance with an image clock;

a horizontal synchronization signal detecting

5 device that detects from the light beam a horizontal synchronization signal for controlling a write start position of the latent image on the image carrier; and

10 a pulse adjusting device that adjusts a number of pulses of the image clock during image formation on the second surface in accordance with a number of pulses of the image clock corresponding to a distance from said horizontal synchronization signal detecting device to the write start position of the latent image and an expansion/contraction ratio of the transfer material

15 after fixing of the image on the first surface.

6. An image forming apparatus as claimed in claim 5, comprising a control device that controls the write start position of the latent image on the second surface in accordance with the frequency of the image 20 clock during image formation on the second surface, adjusted by said pulse adjusting device and a frequency of the image clock during image formation on the second surface.

7. An image forming apparatus as claimed in 25 claim 6, comprising a clock frequency correcting device that sets a frequency of the image clock during image formation on the first surface to a frequency different

from the frequency of the image clock during image formation on the second surface.

8. An image forming apparatus as claimed in claim 7, wherein said clock frequency correcting device
5 adjusts a size of the image formed on the second surface to a size of the image formed on the first surface after fixing by modulating the frequency of the image clock during image formation on the second surface.

10 9. An image forming apparatus capable of successively forming images on a first surface and a second surface of a transfer material and fixing the images, comprising:

an image carrier;
15 a light scanning device that forms a latent image on said image carrier by scanning a light beam based on image data and in accordance with an image clock;

a horizontal synchronization signal detecting device that detects from the light beam a horizontal
20 synchronization signal for controlling a write start position of the latent image on the image carrier;

a calculating device that calculates a frequency of a second image clock during image formation on the second surface that is different from a frequency of a first image clock during image formation on the first surface, and a number of pulses of the second image
25 clock during image formation on the second surface, in

accordance with the frequency of the first image clock during image formation on the first surface, a number of pulses of the first image clock corresponding to a distance from said horizontal synchronization signal

- 5 detecting device to the write start position of the latent image on the first surface and an expansion/contraction ratio of the transfer material after fixing of the image on the first surface; and a control device that controls the write start
- 10 position of the latent image on the second surface in accordance with a result of calculation by said calculating device.

10. An image forming apparatus as claimed in claim 9, comprising a clock frequency correcting device
- 15 that adjusts a size of the image formed on the second surface to a size of the image formed on the first surface after fixing by modulating the frequency of the image clock during image formation on the second surface.

- 20 11. An image forming apparatus capable of successively forming images on a first surface and a second surface of a transfer material and fixing the images, comprising:

- at least one image carrier;
- 25 a plurality of light scanning devices that respectively form latent images on said at least one image carrier by scanning a light beam based on image

data and in accordance with an image clock;

a plurality of horizontal synchronization signal detecting devices that detect from the light beam horizontal synchronization signals for controlling
5 respective write start positions of the respective latent images on the at least one image carrier;

a plurality of pulse adjusting devices that adjust the respective numbers of pulses of the image clock during image formation on the second surface in

10 accordance with numbers of pulses of the image clock corresponding respectively to distances from respective ones of the plurality of horizontal synchronization signal detecting devices to write start positions of the respective latent images and an

15 expansion/contraction ratio of the transfer material after fixing of the images on the first surface;

a belt-shaped member;

an in-surface image positioning device that detects at least one mark provided on said belt-shaped
20 member and adjusts the respective numbers of pulses separately for respective ones of said image forming devices; and

a control device that causes said in-surface image positioning device to adjust the respective numbers of
25 pulses for the respective ones of said image forming devices separately when image formation is carried out on the first surface, and causes at least said counted

pulse adjusting devices to adjust the image write start positions of the respective ones of said image forming devices separately when image formation is carried out on the second surface.

5 12. An image forming apparatus as claimed in claim 11, wherein said belt-shaped member comprises a transfer material conveying member disposed to successively pass said image forming devices such that the respective latent images formed on said at least one image carrier are transferred onto the transfer material conveyed by said transfer material conveying member.

10 13. An image forming apparatus as claimed in claim 11, wherein said belt-shaped member comprises an intermediate transfer device that primarily transfers visible images formed on said at least one image carrier onto said intermediate transfer device, and then secondarily transfers the visible images onto the transfer material.

15 14. An image forming apparatus capable of successively forming images on a first surface and a second surface of a transfer material and fixing the images, comprising:

20 at least one image carrier;

25 a plurality of light scanning devices that respectively form latent images on said at least one image carrier by scanning a light beam based on image data and in

- accordance with an image clock;
- a plurality of horizontal synchronization signal detecting devices that detect from the light beam horizontal synchronization signals for controlling
- 5 respective write start positions of the respective latent images on the at least one image carrier;
- a plurality of pulse adjusting devices that adjust the respective numbers of pulses of the image clock during image formation on the second surface in
- 10 accordance with numbers of pulses of the image clock corresponding respectively to distances from respective ones of the plurality of horizontal synchronization signal detecting devices to write start positions of the respective latent images and an
- 15 expansion/contraction ratio of the transfer material after fixing of the images on the first surface;
- a belt-shaped member;
- an in-surface image positioning device that detects at least one mark provided on said belt-shaped
- 20 member and adjusts the respective numbers of pulses separately for respective ones of said image forming devices; and
- a control device that causes said in-surface image positioning device to adjust the respective numbers of
- 25 pulses for the respective ones of said image forming devices separately when image formation is carried out on the first surface, and causes a corresponding one of

said pulse adjusting devices to adjust the image write start position of one of said image forming devices used as a reference separately when image formation is carried out on the second surface.

5 15. An image forming apparatus as claimed in claim 14, wherein said belt-shaped member comprises a transfer material conveying member disposed to successively pass said image forming devices such that the respective latent images formed on said at least 10 one image carrier are transferred onto the transfer material conveyed by said transfer material conveying member.

15 16. An image forming apparatus as claimed in claim 14, wherein said belt-shaped member comprises an intermediate transfer device that primarily transfers visible images formed on said at least one image carrier onto said intermediate transfer device, and then secondarily transfers the visible images onto the transfer material.

20 17. An image forming apparatus as claimed in claim 14, comprising a clock frequency correcting device that corrects a size of the image formed on the second surface to a size of the image formed on the first surface after fixing by modulating a frequency of 25 the image clock during image formation on the second surface.

18. An image forming apparatus according to claim

14, comprising a transfer material positioning device that positions one end edge of the transfer material in a light beam scanning direction before image formation, and wherein:

5 said transfer material positioning device is disposed on an image write start side and displaceable in accordance with a length of the transfer material in the light beam scanning direction; and

10 the imager forming apparatus is configured such that when the transfer material passes said image forming device for image formation, a center of the transfer material in the light beam scanning direction passes an approximate center of said image forming device.

15 19. An image write start position adjusting method for an image forming apparatus that is capable of successively forming images on a first surface and a second surface of a transfer material and fixing the images and includes a light scanning device that forms
20 a latent image on an image carrier by scanning a light beam based on image data and in accordance with an image clock, a horizontal synchronization signal detecting device that detects from the light beam a horizontal synchronization signal for controlling a
25 write start position of the latent image on the image carrier, the method comprising:

 a pulse adjusting step of adjusting a number of

pulses of the image clock during image formation on the second surface in accordance with a number of pulses of the image clock corresponding to a distance from said horizontal synchronization signal detecting device to
5 the write start position of the latent image and an expansion/contraction ratio of the transfer material after fixing of the image on the first surface.

20. An image write start position adjusting method for an image forming apparatus that is capable
10 of successively forming images on a first surface and a second surface of a transfer material and fixing the images and includes a plurality of light scanning devices that respectively form latent images on at least one image carrier by scanning a light beam based
15 on image data and in accordance with an image clock, a plurality of horizontal synchronization signal detecting devices that detect from the light beam horizontal synchronization signals for controlling respective write start positions of the respective
20 latent images on at least one image carrier, the method comprising:

a pulse adjusting step of adjusting the respective numbers of pulses of the image clock during image formation on the second surface in accordance with
25 numbers of pulses of the image clock corresponding respectively to distances from respective ones of the plurality of horizontal synchronization signal

detecting devices to write start positions of the respective latent images and an expansion/contraction ratio of the transfer material after fixing of the images on the first surface;

5 an in-surface image positioning step of detecting at least one mark provided on one of a belt-shaped member and adjusting the respective numbers of pulses separately for respective ones of the image forming devices; and

10 a control step of causing said in-surface image positioning step to adjust the respective numbers of pulses for the respective ones of the image forming devices separately when image formation is carried out on the first surface, and causing at least said pulse
15 adjusting step to adjust the image write start positions of the respective ones of the image forming devices separately when image formation is carried out on the second surface.

21. An image write start position adjusting
20 method for an image forming apparatus that is capable of successively forming images on a first surface and a second surface of a transfer material and fixing the images and includes a plurality of light scanning devices that respectively form latent images on at
25 least one image carrier by scanning a light beam based on image data and in accordance with an image clock, a plurality of horizontal synchronization signal

detecting devices that detect from the light beam horizontal synchronization signals for controlling respective write start positions of the respective latent images on the at least one image carrier, the
5 method comprising:

a pulse adjusting step of adjusting the respective numbers of pulses of the image clock during image formation on the second surface in accordance with numbers of pulses of the image clock corresponding 10 respectively to distances from respective ones of the plurality of horizontal synchronization signal detecting devices to write start positions of the respective latent images and an expansion/contraction ratio of the transfer material after fixing of the
15 images on the first surface;

an in-surface image positioning step of detecting at least one mark provided on a belt-shaped member and adjusting the respective numbers of pulses separately for respective ones of the image forming devices; and
20 a control step of causing said in-surface image positioning step to adjust the respective numbers of pulses for the respective ones of the image forming devices separately when image formation is carried out on the first surface, and causing said pulse adjusting step to adjust the image write start position of one of the image forming devices used as a reference
25 separately when image formation is carried out on the

second surface.

22. An image write start position adjusting method for an image forming apparatus as claimed in claim 19, comprising an image size adjusting step of
5 adjusting a size of the image formed on the second surface to a size of the image formed on the first surface after fixing by modulating a frequency of the image clock during image formation on the second surface.